

### Abstract

A MFI-structured molecular sieve containing phosphorus and metal components has a formula expressed in anhydrous form and on the basis of oxide weight, as follows: (0~0.3) Na<sub>2</sub>O (0.5~5.5) Al<sub>2</sub>O<sub>3</sub> (1.3~10) P<sub>2</sub>O<sub>5</sub> (0.7~15) M<sub>1</sub><sub>x</sub>O<sub>y</sub> 5 (0.01~5) M<sub>2</sub><sub>m</sub>O<sub>n</sub> (70~97) SiO<sub>2</sub>, wherein M<sub>1</sub> is one of transition metals selected from the group consisting of Fe, Co and Ni, and M<sub>2</sub> is any one of metals selected from the group consisting of Zn, Mn, Ga and Sn. Preparation processes and uses of the instant molecular sieve are also provided. The molecular sieve has an excellent performance for increasing the yield of lower olefins and increasing the 10 aromatics content in gasoline, and can be used as a shape-selective active component for the catalytic cracking catalyst of petroleum hydrocarbons or its additives.